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AUTHOR Wood, Derek E.
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ABSTRACT

This paper examines the significant features of open learning and considers its potential to assist in the promotion of national social and economic goals in New Zealand. It deals primarily with employment-related education and suggests that the three principal beneficiaries--the state, employers, and students--should bear the costs. The paper begins by defining open learning and comparing its student-centered, solution-oriented approach and emphasis on discovery methods of learning with restrictive, traditional learning systems. It then explores the need to change attitudes to establish a climate of cooperation and a multi-partnership of employers, providers, students, and the state. Types of learning methods needed and essential features of successful open learning programs are discussed. Cost is considered in relation to effectiveness and efficiency. Consideration is also given to quality in open learning, wider issues affecting teachers, and the need to codify open learning material to ensure its easy availability. A course of action is proposed, based on partnership rather than competition, with the objective of increasing opportunities to retrain and upgrade the skills of adult and reentry workers. Other proposals include an Open Learning Initiatives Fund, a National Resource Centre, establishment of a set of national technology guidelines, and designation of a full-time Task Force to plan future developments. (YLB)

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Open Learning:
Challenge For The Future

A DISCUSSION PAPER

Prepared for the
Vocational Training Council
by Derek E Wood
Director

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PREFACE

I believe that it is very timely to address the question of open learning in association with distance education. Rapid advances in technology are making modern media and methods far more readily accessible than in the past. Also, industry and commerce in both the public and private sectors are more acutely aware of the importance of sound training to enhance productivity and profitability. At the same time they are seeking cost effective training programmes.

In the field of social equity there is also a growing recognition of the needs of those who have traditionally been and still are disadvantaged by the many constraints that are typical of conventional education and training systems. With its commitment to equality of opportunity the Government is encouraging targeted assistance and more adequate provisions for these groups. Open learning and distance education have the potential to play a significant role in such developments.

This is a further paper in the Vocational Training Council series of Discussion Papers dealing with educational issues from a vocational or employment-related perspective. Its predecessors have all examined different aspects of vocational education, have frequently drawn on overseas experience, and have identified issues that need to be addressed or made suggestions for possible changes. This paper follows that same general pattern. While drawing heavily on overseas experience in this field the paper does so against a background of the pioneering endeavour of New Zealand institutions such as the Correspondence School, the Technical Correspondence Institute and the Massey and Otago Universities. It is a forward looking paper which identifies areas where changes are required and suggests some possible solutions. The purpose of the paper, which has been prepared on behalf of the Council by its Director, Derek Wood, is to stimulate discussion, generate ideas and raise levels of awareness as to the potential use of open learning in future developments in employment-related education and training in this country. It will also provide a basis from which the Council itself will be able to address the issues related to open learning in the process of formulating appropriate advice to the Government.

G M Peters
Chairman

FOREWORD

> "Workforce training and constant retraining - and the larger idea of the workforce as an appreciating (or depreciating) package of appropriate (or inappropriate) skills must climb to the top of the individual firm and the nation"

In making this statement, in **Thriving in Chaos**, Tom Peters captures the very essence of the intention of this paper - to promote the contribution that expanded provisions for human resource development can make to economic and social progress in New Zealand. While recognising the work already being done to promote this concept through open and distance learning initiatives, the major emphasis is on overseas developments and the experience gained as a result. In particular, the paper draws heavily on the extensive international literature which is now emerging to promote, examine or assess the open learning concept. There are frequent references to these writings in the text as they raise issues which are better addressed at the outset in the promotion of open learning concepts in this country. It has also been the writer's good fortune to study and discuss, at first hand, at a number of different stages in its development, the 'Open Tech' initiative of the Manpower Services Commission in the United Kingdom during the past 5 years.

The paper has been developed from an address given by the author at the Technical Correspondence Institute in Lower Hutt on 16 February 1988 and from an earlier article, **The Case for Adult Learning**, published in the **New Zealand Journal for Adult Learning** in 1984 (Vol 16, No 2). Considerable assistance has been received from a number of people who have read and commented on drafts and provided additional information. In particular, I wish to acknowledge assistance from the following:

Messrs Ian Young (Assistant Secretary, Tertiary) and Lawson Robertson (Education Officer, Continuing Education) in the Department of Education; Charles Callaghan (Principal), Fred Johnson (Head of Electrical Engineering Department), Harry Hepple (Head of Learning Resources Centre) and Peter Wilkinson (Staff Development Tutor) at the Technical Correspondence Institute; Brad Imrie (Deputy Principal, Academic) at the Central Institute of Technology; Ray Taylor (Assistant Director General) of the New Zealand Employers Federation and Dr Tom Prebble (Director of Extra-Mural Studies at Massey University). Members of the Vocational Training Council, its Chairman (Mr George Peters) and my colleagues in the Secretariat have also provided valuable information, advice and assistance. Special thanks are due to Rose Bater for her patience, cheerfulness and accurate typing of the manuscript.

While the inputs of all of those who have assisted are acknowledged with appreciation the final responsibility for the material contained and the views expressed in this paper is mine. Nor does its publication commit the Vocational Training Council to any particular course of action or policy advice in the area of open learning. Constituent bodies and groups represented on the Vocational Training Council will be able to raise matters of interest to them through their membership of the Council. Comments from others with a special interest in open learning, particularly in relation to employment-related education and training, will also be very welcome. Such comments will assist in the preparation of a policy advice paper for consideration by the Council at a later stage of this year.

Derek E Wood
Director

Wellington
March 1988

FEEDBACK

To enable opinions on these proposals and the general points raised in the Discussion Paper to be considered by the Vocational Training Council comments should reach the Director, PO Box 11 361, Wellington not later than Monday, 1 August 1988.

UPDATE

For those interested in keeping abreast of new overseas developments in open learning there are periodicals such as **OLS News**, published quarterly by the Council for Educational Technology (10 Metuchen Way, Hedge End, Southampton SO3 4JZ) at a subscription of $27 p.a. and **Spotlight on Open Learning**, distributed free by the Training Commission.* (Distribution Unit, Dept OTN, Room E824, Moorfoot, Sheffield S1 4PQ)

* The name of the British Manpower Services Commission has recently been changed to the Training Commission. The new title has not been used in the text as references pre-date this change.

REPORT SUMMARY

The paper examines the significant features of open learning and considers its potential to assist in the promotion of national social and economic goals. It deals primarily with employment-related education for those already employed, those seeking new career opportunities and those wishing to re-enter the labour market. As the three principal beneficiaries from developments in this area it suggests that the costs should be borne by the state, employers and students.

The paper starts by defining open learning and comparing its student centred, solution orientated approach and its emphasis on discovery methods of learning with the restrictive features typical of many traditional learning systems. It then explores the need to change attitudes in the context of establishing a climate of co-operation which will produce a multi-partnership of employers, providers, students and the state. The types of learning methods needed and the essential features of successful open learning programmes are discussed. Partnership amongst learners, the significance of appropriate methods and media and the quality of the learning process are considered from a user viewpoint.

Cost is considered in relation to effectiveness and efficiency and a check list is included to help identify essential questions to be considered in any developments in this field. An overseas study is used to make a comparison with conventional methods. The inter-relationship between competency based training and open learning assessment emerges throughout the paper as does the potential of genuine open learning to promote significant attitude changes in learners in addition to the implantation of new skills. Consideration is also given to wider issues affecting teachers and the need to codify open learning material to ensure its easy availability.

A course of action is proposed, based on partnership rather than competition, with the objective of increasing opportunities to retrain and up-skill adult workers and those seeking to re-enter the workforce. This stresses the need for Government commitment, adequate resource allocation and the need for an awareness raising campaign to promote open learning concepts. An Open Learning Initiatives Fund is suggested to promote a consumer driven partnership with industry and a National Resource Centre is proposed, based on the Technical Correspondence Institute. These developments envisage new partnerships involving industry with regional and national polytechnics. Establishment of a set of national technology guidelines and a full time Task Force to plan future developments is also proposed. The Vocational Training Council is seen as the appropriate body to develop policy advice to achieve these objectives.

INTRODUCTION

The rate of social, economic and technological change in New Zealand in recent years is probably unprecedented. In response to these changes it is necessary to develop and use new flexible educational and training methods which are more relevant and accessible to adults. In dismissing the Treasury's 1987 proposals for educational reform as "the solution of the law of the jungle" the Rt Hon David Lange stated that,"The challenge is to have a system that does not detract from the capacity of the student to learn" (1). This paper is written in the belief that open learning has the potential to make a significant contribution to the achievement of such a system.

In its simplest terms, **open learning** is a system which removes administrative and educational constraints that interfere with learning opportunities. As this is frequently achieved by removing the need for students to attend educational institutions, open learning is often closely associated with **distance education**. This paper explores the concept of open learning, especially through distance education, and considers its potential to expand cost-effective employment-related education and training opportunities in this country in support of the achievement of national social and economic goals by optimising the capacity of students to learn. It is based on the premise that, while traditional methods will continue to play a valuable role in developing certain types of skills at key periods in the working life of individuals, they cannot, on their own, cope with the growing volume and variety of present and future training needs.

Four clear parameters must be established from the outset. First, the paper is written about the **needs of users** rather than about those of educational providers. Second, it deals with the **ongoing education of adults** rather than the initial training of school leavers. Third, it concentrates on the area of **employment-related education and training** - commonly referred to as technical or vocational education. Fourth, while certain certificate courses offered extra-murally by Massey Univeristy could fall into this category, the **role of the universities** in open learning is, in general, **outside its scope**.

Nor is criticism of what is done or not done in New Zealand at present the main purpose of this paper. Professor Aldwyn Cooper, Managing Director of Henley Distance Learning, has recently claimed that Britain has pioneered modern open and distance learning techniques and is acknowledged as the world leader in this area (2). But New Zealand has a proud tradition in distance education which goes back over 60 years. The Correspondence School, the

Technical Correspondence Institute and the extra-mural departments of the universities, notably Massey and Otago, have all contributed to the international recognition we have earned for our pioneering work in this field. It is from this foundation of what we have already established and achieved that we need to explore how we can best meet the changing requirements for workforce training that are being imposed upon us by the rapidity of economic, social and technological change.

The two main users of employment-related education and training are industry (in the generic sense of the term) and individual students. Industry is also a significant provider and so has a dual interest in the development of cost effective systems of training delivery to enhance productivity. As far back as 1981 Charles Callaghan, the present Principal of the Technical Correspondence Institute (TCI), stated that "the students' welfare in regard to how quickly and effectively they can learn is my major concern" (3). This view would obviously be supported by industry. There is now clear evidence, from a variety of international sources, that those companies that provide high quality training throughout their organisation are demonstrably more economically successful than those that do not (4). Open learning has the potential to make a significant contribution to the achievement of such success. But, to do so will require a **partnership** which involves educational providers, individuals, enterprises, and the state.

A report to the Vocational Training Council in 1984 on initial developments in the British Open Tech system (5) commented that all ingredients of an effective Open Tech system were available in New Zealand and suggested that only a recipe was lacking. This view was echoed by Evan Jones, Deputy Principal of TCI, speaking at an international conference in the same year, when he stated that, "In New Zealand there is, certainly in the higher vocational education sense, an almost total lack of strategy as opposed to expedient tactics" (6). It will, therefore, also be necessary to examine the policy implications in the development of open learning and to consider possible directions for the future.

However, before doing so, it is necessary to take stock of present attitudes to distance education. In this connection Callaghan and Jones, in their separate papers, have expressed a concern that, by comparison with "live" (classroom) education, correspondence (distance) education is regarded by many as "dead" (7) and considered as second best and "relegated to the reserves" (8). Their concerns raise important questions about awareness, attitudes and participation which will receive further consideration later in this paper.

DEFINITION OF TERMS

OPEN OR CLOSED ?

When comparing "open" and "closed" (or traditional) learning systems we need to think particularly in terms of the constraints on availability that the latter places on many adults. Common features of traditional learning systems are:

- fixed locations, starting and finishing dates and times
- limited availability in localities (mainly in urban centres)
- restrictive entry criteria (e.g. age, employment, educational attainment and class sizes)
- learning methods and pace geared to groups rather than individuals
- overt hidden costs and inconveniences (e.g. travel, child care)
- willingness or ability of employers to release people.

Open learning on the other hand has three principal features:

- it is based on the needs and circumstances of **individual students** rather than on the administrative needs of institutions;
- it is **solution orientated**, aiming to identify and overcome barriers to access and to learning on an individual basis;
- it is concerned with **how people learn** and with what it is possible, appropriate or cost-effective for people to learn in certain ways.

In other words, it implies that there are no educational prerequisites for undertaking a course of study and it breaks down such barriers as cost, time away from work, geographic location and age and sex of participants. Material and teachers are available on demand to allow flexible timing and access. Thus open learning does not imply a single method or system. It is more concerned with method (the how, when and where) than with redesigning content (the what and how well) so that open learning systems may often recast existing content by designing a non-traditional learning approach to increase its availability.

An important feature of open learning is that it should not be necessary to study a full 'course' in the commonly understood sense of that term. Rather, open learning implies that self contained segments or **modules** should be available to allow individuals to build on their basic qualifications as required. Ideally, it should also be able to identify the particular competences of the student prior to starting a programme to ensure that new ground is covered. Thus the concept of **mastery learning** is also a significant

feature of the open learning approach. In brief, it could be summarised as providing "**effective availability**". However, open learning should not be viewed as the panacea for all training ills as it, also, is not necessarily exempt from constraints - such as, for instance, the problem of hidden costs and the difficulties of studying while in full-time employment.

DISTANCE LEARNING OR CORRESPONDENCE TEACHING ?

As stated in the Introduction, open learning is frequently associated with distance education (more commonly known as correspondence teaching). But is there a difference between learning 'at a distance' and being taught by correspondence? Professor Cooper (9) differentiates between them on the basis that "Correspondence teaching tends to hand down the given word in a purely didactic mode" whereas "distance learning programmes are 'learner-centred' and designed to assist the learner to choose the most effective pathway to learning objectives". So, just as in an open system, the student is central to a distance learning approach whereas, in correspondence teaching it is the teacher who controls the learning process. Likewise, distance learning also implies the use of discovery methods in addition to the imparting of knowledge. It is on this basis that Cooper sees a correspondence course as a sub-set of distance learning.

However, a distance education system can be just as "closed" as an institution based system if it contains a number of the features described on page 3. For instance, in New Zealand, until the recent removal by the Government of certain employment requirements for enrolment at the Technical Correspondence Institute, their courses were, to a large extent, "closed". The fact that the Institute received over 400 enquiries from previously excluded students within the first two weeks following the easing of these restrictions is clear evidence of this. Similarly, if it is only possible to enrol for a full course of study, which may well extend over a period of years, a programme exhibits closed features.

OVERSEAS EXAMPLES

Thus, just as we have identified correspondence teaching as a sub-set or one method of distance learning so, in its turn, is distance education a possible (but not essential) part of open learning. Open learning principles are

central to this paper. They can be illustrated by reference to two overseas initiatives - one in Canada and one in Scotland. The fact that both are predominantly institution based simply illustrates the point already made that open learning is equally applicable in either setting.

One of the most exciting developments in this regard has taken place at Holland College on Prince Edward Island in Canada (10). There Principal Larry Coffin and his staff have developed a programme for vocational education which has five main features.

1. It is based on a clear **identification of competencies** required in a wide range of occupations;
2. It is broken down into self contained but inter related **modules** of learning;
3. It is based on the concept of **mastery learning** and involves the **student in the assessment**;
4. It provides for **selective study** in that, where competence can be demonstrated, a unit of learning can be credited;
5. It results in a **qualification** which is **performance based** and has the potential for later expansion on a unit of study basis.

The learning plan on page 6 (Fig 1), which is the basis of student study at Holland College, demonstrates clearly how "open" learning features can be applied equally in an institutional classroom setting or as part of a distance education programme (11).

The Holland College approach is a predecessor of and has much in common with the SCOTVEC modular national certificate (12) which was explained to many interested groups by its chief executive, Tom McCool, when he visited New Zealand in March 1987 as a guest of the Vocational Training Council and the Departments of Education and Labour. An essential feature of the SCOTVEC approach is the clear statement of objectives and the standardisation of the modules which makes for ease of transferability between one occupation and another which have skill requirements in common. While criticised in some quarters as fragmenting skills, the modular system has the great advantage, especially for those with limited attainments previously, of producing progressive success and increasing self confidence thus encouraging continuing education and training. It also has the potential to establish "clusters" of modules related to the skills required in specific occupations thus increasing training flexibility and worker mobility.

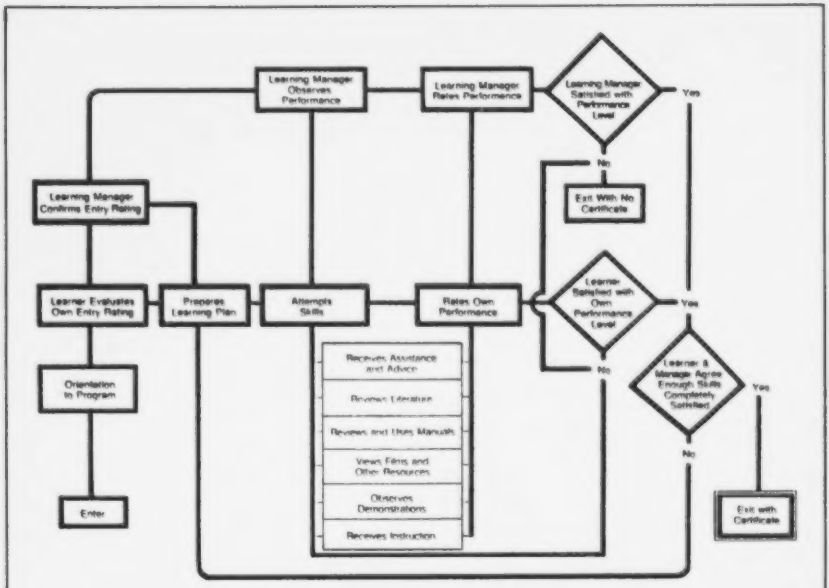


Fig. 1 OPEN LEARNING MODEL *after Holland College*

These then are some examples of openness in an institutional setting. Ideally this principle should apply equally to both institutional and distance learning programmes. However, given the individual relationship between learner and tutor that is an essential feature of distance learning, it is probably a more fruitful field for the initial promotion of open learning concepts than is classroom based instruction with its traditional emphasis on the group as the teaching unit. This was certainly the Open Tech experience in England but it is significant to note that many colleges are now purchasing Open Tech materials for use in classroom learning - and others are producing and marketing similar materials for dual use.

SUMMARY

This section has promoted the concept of student centred, individualised learning, both in institutions and in distance education, to increase the "effective availability" of employment-related learning opportunities. Is this a desirable goal and, if so, how best can it be achieved?

WHO BENEFITS AND WHO PAYS?

POTENTIAL BENEFICIARIES

In a consultative document published by the Manpower Services Commission (MSC) in the United Kingdom in 1981 (13) three categories of adults who could benefit from an expansion of education and training were identified:

(a) individuals and groups who have training, re-training or career development needs recognised and identified within their own organisation. This was seen as probably the largest group who may be directed towards nationally recognised qualifications. They could most probably be best accommodated by a "package" tailored to the specific requirements of individuals or organisations;

(In general terms, this appears to be the group most fully catered for through correspondence teaching in New Zealand at present)

(b) people who, while continuing in employment, would respond to opportunities to develop or change their own careers. This group would probably be seeking learning opportunities outside of working hours either on their own initiative or with the support and encouragement of their employer;

(In New Zealand, this would include those who have enrolled in university extra-mural courses, many of which now have a strong vocational emphasis)

(c) people who have become unemployed or who, like many women at home with families, wish to re-enter the labour market.

(The large number of women in this position and the significant increase in unemployment in recent years, also make these important target groups in New Zealand)

Six years later, with the conversion of the British Open Tech to the Open College its first chief executive, Sheila Innes, confirmed that these would continue to be the chief target groups. She saw the typical student in a busy job completing a short course by three hours of study for 10 consecutive weeks. She also anticipated that most courses would lead to an existing nationally recognised qualification or give credit towards one (14).

THE NEW ZEALAND SCENE

The need for similar opportunities in New Zealand has been clearly recognised through the surveyed opinions of a representative group of prominent and influential local and national decision makers from a wide variety of social and economic sectors. In **Education and the Economy: A Vocational Perspective,** published by the Vocational Training Council in 1986 (15), 89% of respondents to the survey on which it was based believed that New Zealand was not currently economically successful. Among the five main reasons identified for this were:

* Insufficient expenditure on education and training
* Lack of skills in the workplace

Respondents saw continuing education in New Zealand as spasmodic and patchy and over half of them were not satisfied with present opportunities available, or with community attitudes towards continuing education. They saw its quality and availability dependent on the geographic location or employment position of participants. They saw it as part-time study that is too brief, too accidental and too inefficient for training and retraining. Frequently cited problems were: inappropriate courses; insufficient on-job training; inadequate provision in provincial towns and rural areas; difficulties encountered by women re-entering the workforce; too few opportunities for retraining; lack of opportunity for continued learning by professional groups; funding difficulties.

Many of these concerns are similar to those which prompted the Open Tech developments in the United Kingdom. They suggest that there is an urgent need to promote a cost-effective and easily accessible system of continuing employment-related adult education and training in the country. Open learning could provide part of such a strategy.

WOMEN

At the start of 1987 an Education Department Working Party was set up to examine ways in which new technology could be used to overcome barriers to the delivery of educational programmes in New Zealand. Because of being disadvantaged by distance from access to education the rural women of Southland have been chosen as a specific target group with whom to run a pilot study. The prior existence of networks - notably Women in Agriculture (WAg) - made this a relatively easy group to communicate with for such a study. Evidence of the need for expanded learning opportunities was surely provided by more than 200 women who met with the Working Party and suggested over 250 topics for study.

With a view to the long term possibilities of this development on an expanded scale it has been decided to offer only one major topic in the pilot - with the emphasis on the achievement of excellence. The topic chosen, "The Challenge of Change", will be in three parts: An introduction to new technology; Economic change; Social effects of change. It is planned for the winter of 1988 using broadcast television and video tapes (for visual elements), teleconferencing (for interaction between students and with tutors), and bureaufax (for transmission of printed materials) - methods which are discussed more fully on pages 26 and 27. While this pilot study will undoubtedly be of benefit to the women who participate, it has a much greater potential to bring learning opportunities into a great number of homes and enterprises throughout New Zealand. It is an experiment of great significance.

SUPERVISORS AND TECHNICIANS

In its initial survey of adult training needs the Manpower Services Commission identified supervisors and technicians as the two key groups in the workforce who were essential for improved economic performance but difficult to release for off-job training. As a result, many of the Open Tech projects were targeted to meeting the training needs of these two groups.

There are plenty of indications that they are equally significant in New Zealand - and equally difficult to release for off-job courses. Furthermore, managers frequently have an unrealistic expectation of the outcome of off-job training - especially for supervisors. In recognition of this the widely used guidelines for the training of supervisors (prepared by the Vocational Training Council in the 1970's) have been recently revised (16). In their new format they have the potential to incorporate an open learning component - one which has, in fact, been developed and published recently by Gordon Rabey for on-job training of supervisors (17). The benefits of direct application in a work environment of newly acquired skills can hardly be over-estimated - with industry trainers and polytechnic tutors assuming a new and important role as resource people, learning advisers, coaches and counsellors.

In the field of technician training, Taranaki Polytechnic has already undertaken some pioneering work. They have developed custom-built distance education courses to train technicians employed by Synfuels. Because of their requirement to work shifts and their criticality to their industry, off-job training was not an option. Instead, with the full support of their employer, they are now able to use quiet periods on the job productively for skill

enhancement. Current research is being undertaken by the Vocational Training Council to identify the training needs of technicians, how they are met and what are the expectations of industry. The report to be published later this year may well identify similar training needs in other industries.

MEETING THE COSTS

If, as overseas experience suggests, open learning (and especially open distance learning) holds the key to solving many of the problems identified in New Zealand, who should meet the costs of such developments? It is clear that there will be three principal and inter-related beneficiaries. They are:

* The **state** through the promotion of its social and economic goals by enhanced provisions for equity and a greater realisation of the earning potential of the whole workforce with consequent gains for society at large.
* **Enterprises** through a more effective and skilled work force better able to cope with rapid change and to compete in international markets.
* **Individuals** through the opportunities to gain increased satisfaction and earning potential throughout their working lives.

While recognising the state's essential financial commitment to all educational sectors, two thirds of the respondents to the previously mentioned survey believed that, in the field of continuing education and training, the employer and the individual should also make some financial contribution (18). If this view is accepted then practical and effective ways of **changing community attitudes** to continuing education will need to be found. Also, a **partnership** will need to be built which involves individual learners, enterprises, providers and the state on a cost sharing basis. These issues will be discussed in the next section.

PRIMING THE PUMP

In the field of apprenticeship reform the Government has already demonstrated the power of financial inducements to change attitudes. Its substantial subsidies to industry have encouraged major initiatives in the introduction of systematic on-job training programmes. If an open learning strategy is also to

be adopted as Government policy it is unlikely to succeed until relevant learning materials and methods are more readily available. Initially, therefore, there will be a requirement for considerable financial commitment from the Government.

In Great Britain this was done by the Manpower Services Commission's five year pump priming project known as the "Open Tech". This provided Government financial assistance to open learning projects which were strictly employment related and had been identified and were to be developed in partnerships between industry and providers. Much of the material developed proved suitable for wider use and cost recovery through marketing the product became a feature of many projects. The scheme has now been translated into the Open College which is expected to stand alone and to operate on a full cost recovery basis. Another British intiative, introduced by the Department of Trade and Industry in 1985, provided for grants covering up to 50% of the costs of developing distance learning video courses for use in industry.

The essential feature of each of these schemes was the **funding partnership** established between the Government and industry to develop programmes which were identified as important by industry. While mistakes were made and quality control was not always adequate the principle of partnership and the new concept of adult education were firmly established in these initial years. In New Zealand, for some years, we have had a Training Development Assistance Fund which provides Government support for new industry initiatives in training on a partnership basis. An Open Learning Initiatives Fund, based on similar principles and drawing on the lessons to be learned from British experience with the Open Tech, could encourage the expansion and increased availability of employment-related adult education and training in this way. Government could subsidise the production of open learning materials as it has done the production of on-job training manuals for apprenticeship reform.

SUMMARY

The case for expanded opportunities for employment-related education has been promoted and essential target groups have been identified in this section. Substantial initial Government funding, leading to a partnership approach, has been proposed. Are these the key target groups in New Zealand and is the considerable Government expenditure required warranted?

ATTITUDES TO CONTINUING EDUCATION

THE NEED FOR CHANGE

The 1980/81 Social Indicators Survey (19) showed that the main users of continuing education were those who had the greatest amount of formal education. This view is reinforced by labour force statistics in September 1987 which showed that the average number of persons in the labour force with no post-school qualifications was 944,000, or 59.7 percent (20). Some 13.3% of the workforce were identified as holding trades qualifications and a further 6.4% as holding university degrees. But, apart from nursing and teaching (6.1%), a bare 6.0% held such middle group qualifications as technician certificates and other diplomas for which, judging by overseas trends, there is an anticipated high demand in the emerging information-based society. Thus, the task of changing attitudes becomes a major one indeed. The challenge is to develop a stable and ongoing diet of adult education which recognises present day technological innovation and the constant need for new skills.

It is clear that traditional teaching methods will not suffice. When people with limited educational qualifications are encouraged to undertake further study by correspondence, the frequency of failure and non-completion is such that there is a danger that existing attitudes will be reinforced. A recent survey of completion rates in the 15 different courses (based entirely on print media) offered by the Trade Union Postal Education Service in 1986-87 showed that of the 1060 enrolments, 1498 assignments were undertaken but only 130 or 12% were completed (21).

While the understandable conclusion was drawn that correspondence education was not generally an appropriate medium for this group it should not necessarily imply that face to face situations are the only alternative. There is also a considerable drop out rate in many technical correspondence courses - although those who complete have a high level of success. What is required is that other distance learning possibilities need to be considered and investigated. For instance, a new technique called Diverse Use Communication Technology (DUCT), is being used in Australia where groups of aborigines in various parts of the country meet with their local lecturer and are linked by telephone line to a lecturer in the School of Aboriginal Education in Adelaide (22). Such distance learning techniques, possibly reinforced with inter-active video may prove ideal for students with limited literary skills.

THE AMERICAN EXPERIENCE

In the United States approximately 1 in 4 of those enrolled in adult learning programmes live in rural areas and are consequently dependent on distance education. A recent survey there (23) has shown that adult learners generally seek courses of study that:

- are **directly relevant** to their life situations
- provide **flexibility** of scheduling and course location
- are **learner driven**, i.e. based on discovery learning rather than on reception of teacher or text book input.

The survey also identified that no one educational provider or programme seemed best suited to provide a complete service. The common features of successful programmes were shown to be:

- response to a **specific need**
- response to the **expectations** of adult learners
- extensive **cooperation** with other providers
- concise and **jargon-free** descriptive materials

These results relate very closely to our earlier definition of open learning.

PROBLEMS TO OVERCOME

There is a very close relationship between attitudes and methodology. Just as many of our less literate pupils leave school with a sense of frustration and failure, so do many adults in New Zealand society approach the prospect of continuing education with a great deal of reluctance and uncertainty - based often on their previous experience of "the system". There are two crucial factors that need to be addressed in seeking to redress this situation. One is literacy and the other is awareness.

Callaghan has already pointed out the importance of literacy in his study of the results of TCI students (24). While he has also emphasised the need for the rigorous application of readability standards to distance learning materials there are still many adults with insufficient literacy skills to succeed in such learning situations. Their problem is compounded by a resulting loss of self confidence which in turn produces a lack of motivation. It is thus essential to help people to realise what their skill inadequacies are and to expand the means to overcome them. Thus interested trainees or students may first need to receive remedial assistance providing basic literacy and the skills required in "learning to learn".

But there is also a need for enhanced awareness of the importance of continuing education. This can best be induced by establishing a climate in an organisation or enterprise in which learning is seen to be relevant. In describing distance learning programme he introduced for Thorn Security, Fred Jane concluded that, "I have become firmly convinced that, if this awareness is not prominent in the minds of all individuals, to the extent it modifies constructively their attitude to training, all training plans will either fail or be considerably reduced in effectiveness" (25). The challenge for senior management is implicit in Jane's observation.

ESTABLISHING A CLIMATE

The experience of the Vocational Training Council with the validation of duty and task charts prepared using the DACUM method of training needs analysis supports this view. The widespread involvement of skilled employees has been a major factor in creating a climate in which apprenticeship reform and improved on-job training can flourish. But the establishment of such a climate is equally dependent on management attitudes which almost certainly reflect the status given to training by boards of directors.

It has frequently been stated that only limited progress will be made until training expenditure is seen as an investment expected to lead to an identifiable increase in business income, rather than as an overhead which can, like building maintenance, be reduced when times are hard. Many would no doubt agree in principle with Ray Parker, General Manager of British Telecom's training department, that "Human resource management is not merely about head hunting to fill vacancies. At its best, it is the continuous development of people for planned succession and the changing nature of work" (26). Unfortunately it is the translation of the principle into practice that often proves to be the stumbling block.

SUMMARY

The need to change both community and management attitudes to continuing education has been highlighted in this section. Some ways in which this can be done have been identified. Do you agree with the problems as presented? If so, what other remedies can you suggest?

PARTNERSHIP

The concept of partnership has already arisen several times in this paper in a number of different contexts. There is the partnership between employers and employees, between providers and enterprises, between students and teachers, to name but a few. And each partnership interacts with the others. To be successful, a systematic approach is needed in which these partners are interdependent rather than independent. The current pre-occupation with a market approach and the encouragement of competition between providers may well undermine such a development which is dependent on co-operation and the free flow of information for its success.

ON THE JOB

The former Director of the MSC's Open Tech unit, Dr George Tolley, called it "a programme that calls for collaboration and commitment". Roger Lyons, a British expert in open learning, in commenting on this recently, has suggested that "the commitment of the employer must surely be judged on whether staffing levels are sufficient to allow employees reasonable time to take advantage of open learning". He went on to say that, "It is my impression that employers in general are sorely tempted to allocate insufficient time during working hours for employees to make proper use of the open learning modules. It is fundamental to effective industrial training that proper time off is allowed during the working day" (27). As was stated at the outset, this paper is concerned principally with employment-related education and training for adults. On this basis, there seems to be a considerable economic advantage in providing time and assistance during the working day to increase the effectiveness and skills mastery of members of staff.

This raises again the question of cost sharing. Snell and Binsted (28) point out that one of the important issues which relates to decisions about infrastructure is whether the learners or their employing organisation pay for the training. The decision about who pays will have an effect on learner's motivation, as will decisions about who selects the learners and who chooses what they learn. Likewise, the extent to which whole industries are willing to become financial partners with educational providers in developing open learning packages may well be the determining factor for progress in this field as few enterprises in this country are substantial enough to make such an undertaking on their own.

EMPLOYERS AND PROVIDERS

The necessary partnership between employer and employee leads naturally to the need for a strong partnership between employers and providers. An essential feature of the British Open Tech Project was to promote collaboration in designing and implementing open learning systems by working through existing agencies and bringing their expertise, interests and resources together in effective co-operation. In recognising that the bulk of adult training takes place outside of educational institutions the MSC sought to foster the mutual reinforcement of the interests and expertise of education and industry. It did this by developing a **project based approach** to meet identified needs which ensured that a genuine partnership would result.

In an early report on new developments in open learning Freshwater and Crawley (29) emphasised the integration of theory and practice in the design of learning programmes to facilitate the simple transfer of learning. By taking learning into the workplace they stressed that the opportunity was there to design the learning programme so that paper based learning was integrated with practical experience and exercises.

This approach will require a new collaboration between industry and education. Training officers and work-based supervisors could find themselves increasingly offering tutorial support in association with college-based tutors where learners are sponsored by their employer. By the appointment of work-based tutors learning can be related to situations on the job at the time the learning occurs, rather than days or weeks later. The concept of "co-operative education" is receiving growing recognition at an international level and it has the potential to optimise the complementary strengths of "open" and "closed" learning. Thus the promotion of partnership can avoid the danger of polarisation between exponents of the two systems.

AMONG PROVIDERS

If open learning is to develop and flourish collaboration among providers rather than competition will be necessary. With current policy initiatives encouraging the latter there are already disturbing trends developing in the area of ACCESS training with an understandable reluctance of providers to share with their competitors programmes which they have developed using their own resources.

An essential requirement of open learning is the availability of a tutor or counsellor on an 'as required' basis. Difficulty in providing such immediate feedback is one of the acknowledged disadvantages of traditional correspondence education. Thus a partnership needs to be developed between a national resource centre such as TCI, local polytechnics, and trainers in industry that provides the essential support service if students using open learning techniques are going to be reassured, tutored, encouraged - and hopefully 'transformed' as will be explained in the section on quality in open learning.

A MULTI-PARTNERSHIP

There are already some useful examples in New Zealand of the type of multi-partnership envisaged in this section. Currently, for instance, a training programme for fellmongers is being developed which includes a significant element of distance learning. It is a joint effort which involves the Tanning Industry Training Board (for needs identification), the Manawatu Polytechnic (the provider), the Fellmongery Institute (the industry) and the Technical Correspondence Institute (as a resource and professional assistance centre).

An earlier example of the impact of TCI as a national resource centre was the dispensary assistants' course developed in the late 1970's in co-operation with the Pharmaceutical Society of New Zealand. In addition to the distance elements in the course, which included video tapes and other visual aids and practical exercises, "live" sessions were conducted in local technical institutes by practising pharmacists. As they were part-time tutors with few if any skills or experience in developing teaching materials, TCI provided resources in the form of teaching notes and class materials to support the distance learning package.

In similar vein TCI has co-operated with a number of industry training boards to produce or convert convential teaching material to distance learning assignments. Thus the Distribution Industry Training Board's National Certificate in Retailing has been made more widely available. Other projects have included co-operation with the Fishing Industry Training Council and the Local Government Training Board.

PARTNERSHIP AMONG LEARNERS

A further partnership has also been identified by Snell and Binsted (30). They promote the concept of **learning group** based programmes based on interaction between the learners who share their ideas and experience. Each member must accept full responsibility for their own learning and development but must also acknowledge their obligation to be a resource to the other group members as needed. Most of the learning takes place outside the group in the form of work-based projects with distance learning being punctuated by periodic meetings - perhaps with a tutor or facilitator - for review and discussion. In New Zealand, university experience suggests that this is a component that is equally as important as the provision of tutor assistance. Massey University has strong learner networks and area co-ordinators who put new students in touch with others who are studying the same subject. Otago University has local tutors attached to educational institutions in other centres to assist students and to facilitate networking.

Recognising the need to maintain momentum in any learning programme Snell and Binsted have developed the model opposite (Fig 2) which shows the interaction between people and materials to achieve this. In a New Zealand setting it would not be difficult to identify a role in such a model for most of the potential partners in a successful open distance learning programme.

SUMMARY

Necessary partnerships involving employers, learners and providers have been identified in this section and a case made for a multi-partnership and co-operative approach as opposed to the market-driven competitive one. What emphasis do you place on partnership and collaboration in open learning and how should they be promoted?

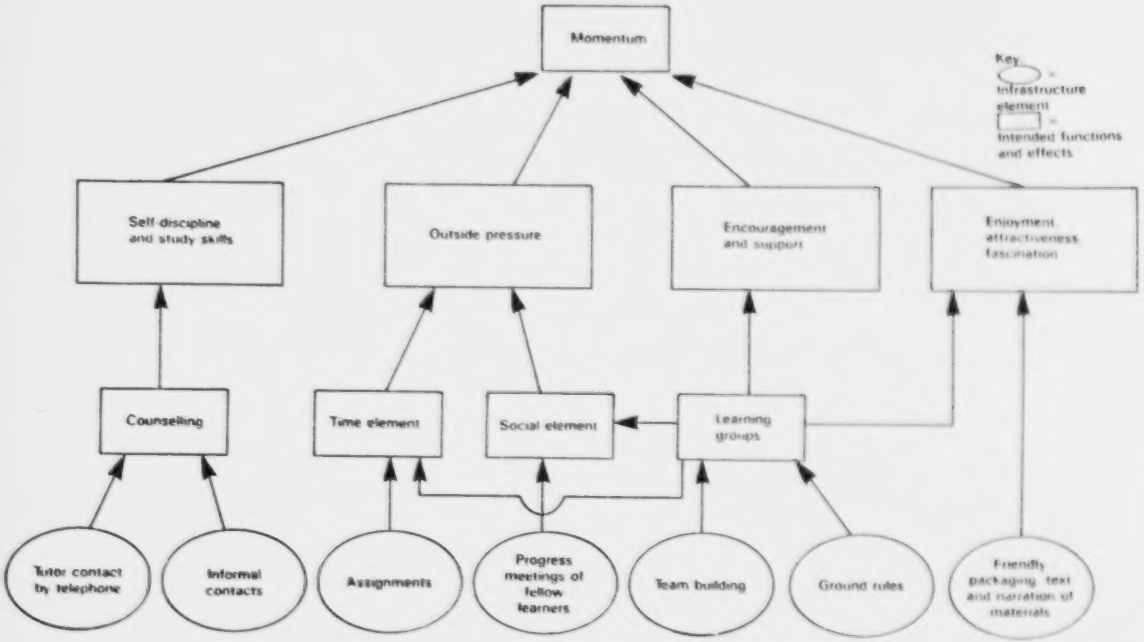


Fig. 2 SOURCES OF MOMENTUM *after Snell and Binsted*

COUNTING THE COST

The need for a partnership in meeting the costs between the state, enterprises and individiuals has already been identified (see page 10-11). But what are those costs? Basically there are two major ones - development and delivery. But, as well as considering absolute costs, it is also necessary to make an appraisal of effectiveness and efficiency. A detailed study of these aspects of open learning has been undertaken by Derek Birch and Jack Latcham for the Further Education Staff College (31). Their research provides a systematic analysis of production costs, tutor costs for delivery, administrative support, and the management of open learning innovations which are then measured for efficiency and effectiveness against traditional learning methods. The techniques which they have developed or identified would also have a practical application in a New Zealand setting.

ECONOMIES OF SCALE

One of the problems New Zealand faces in so many areas is the need to provide diverse resources and facilities for a relatively small population. This is equally true for open and distance learning. Thus there is a strong argument for central direction, production and marketing of open learning materials. Some of the advantages identified by Birch and Latcham that would accrue from this approach would be:

- the more efficient use of professional and technical expertise;
- quality control advantages;
- longer print-runs with lower print and packaging costs per copy; and
- the ability to subsidise materials aimed at small but important markets from the 'surpluses' generated by popular packages (32).

While regional providers would obviously still have opportunities to undertake new initiatives, especially to meet identified local requirements - as is being done with SCOTVEC moodules for instance - these would be a national resource and facility from which all could benefit. This would, in general, leave local polytechnics free to concentrate on the provision of the other essential components of open learning - tutorial assistance "on demand", guidance and counselling, the provision of necessary practical experience in workshops and laboratories and the conduct of seminars and provision of group learning opportunities.

PRODUCTION AND DELIVERY COSTS

Initial costs of an open learning initiative will obviously not be cheap. But they need to be set in a correct perspective in which three significant factors require consideration.

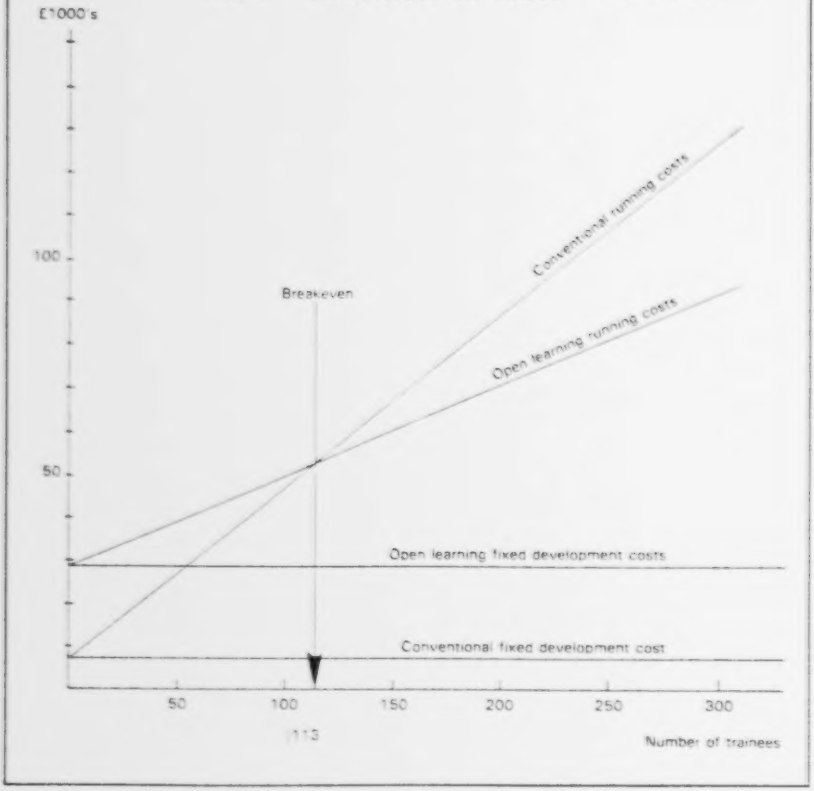
First, the partnership approach of providers in co-operation with industry, combined with the ingenuity of New Zealanders and our ability to draw on overseas experience, should ensure the cost effective production of suitable materials. This may be illustrated from comments made by New Zealand experts in industry and education when evaluating a sophisticated overseas open learning package dealing with digital techniques (33) for the Vocational Training Council. A significant feature of the material, which contains a mini-computer to provide "hands on" experience, is that leading British electronics firms have made available top quality technical staff at no cost to provide the industrial input to the package. While evaluation from industry rated the learning package highly it was significant the educationalists believed that we could produce similar material more cheaply in New Zealand.

Second, the unit cost of such materials is reducing at an almost unbelievable rate and their availability, both to students and providers, is increasing just as rapidly. Whereas cost and lack of availability of hardware to students was a crippling factor when TCI experimented with a technology based approach to distance learning a decade ago, this need no longer be a blockage to new developments. Thus, both interactive video and computer based instruction (CBI) must now be seriously considered in choosing delivery materials.

Third, and perhaps most significantly, considerations of cost need to provide a true comparison with institutional teaching - not just of development costs but also of the costs of delivery. In describing the open learning approach adopted by Austin Rover to cope with fundamental and massive changes in technology, productivity and its product range, John Williams asks how often those who are put off using such methods because of the apparent high development costs actually calculate the real costs of training - including absence of trainees from the workforce (34).

Williams claims that, over three years of the Austin Rover Project life, open learning reduced actual course duration by 30 per cent or more. Through the comparison of four open learning modules with an equivalent conventionally

Fig. 3 COMPARISON OF COSTS *after Williams*



developed course, with identical objectives, he had developed the cost comparison model (35) shown above. As a major concession, Williams notes that travel and subsistence costs, which would be saved using open learning techniques, have not been included in the equation.

Real data was used in this exercise which indicates that the open learning solution would require a minimum of 113 students to use the course (not all at once, of course) for it to be more cost effective than an equivalent traditional course. At Austin Rover, the cost comparison model is now part of a courseware developer's tools for conducting a thorough training needs analysis on any project which may be considered for an open learning solution.

EFFECTIVENESS AND EFFICIENCY

Costs to the employer, the individual and the state should not be the only determinants of the type of employment-related education provided. For instance, even where it is efficient to provide open learning not all students are able or wish to use such opportunities - likewise not all subjects are suitable for such self-directed learning. Thus there will almost certainly be a continuation of the requirement to provide conventional institution based learning facilities while increasing open distance learning opportunities and promoting a growing interaction between the two systems. In either case, however, cost effectiveness will become an increasingly important determinant and will most certainly be a crucial question in any consideration of the introduction and expansion of open learning in New Zealand. In a summary of the benefits of open learning David Roche (36) identified cost effectiveness as a significant factor when he wrote:

> "For the individual participant there is not need to take time off work; he/she can continue to work while training. For the employing organisation, this means that employees do not need to be covered or replaced while training; they continue to make an economic contribution and training is therefore possible for a very large number of staff at the same time using Open Learning. This would be logistically extremely difficult and very expensive in direct and indirect costs using any other method.
>
> Allowing that these courses are much less expensive than conventional courses studied off the job (employers calculate the savings to be as high as 80 per cent), the benefits considered together make open learning a very serious and competitive option to both individuals and organisations, and these, I think, are the chief reasons for its growing popularity in organisations both large and small".

This view was substantiated by Frances Airey and Mary Goodman in their survey of distance education in industry training in the United Kingdom in 1986 (37) when they noted that an important benefit of distance education as perceived by industry is its potential savings in time and money. There is a steadily increasing volume of research evidence, such as the previously described work of Williams at Austin Rover, which supports this contention. In their study of British industry aimed at changing attitudes to training, Coopers and Lybrand have identified that "managers will be encouraged to invest in more training if they are convinced they can get better performance from a given level of

expenditure" (38). There could well be a direct relationship between such an attitude and the increased availability and potential cost effectiveness of open distance learning.

A CHECK LIST

In developing the Open Tech concept in 1982 the MSC produced a useful checklist which provides a valuable tool for evaluating efficiency and effectiveness (39). Project proposers and managers were recommended to examine the following aspects of their work:

- "- ... whether the project met its own objectives as regards costs, staffing and participation of employers and educational institutions;
- whether the provision reached its potential clients;
- whether the level of retention of students was satisfactory;
- whether clients needs were adequately and equitably met;
- whether trainees reached desired levels of skill and/or knowledge and how these were assessed;
- whether trainees used the skill/knowledge they had acquired in their present employment or in new employment;
- whether the project was efficiently and cost effectively managed;
- whether the project produced learning materials and/or systems and, if so, whether their capability of extension had been taken fully into account;
- what key problems had to be overcome;
- what obstacles still remained."

Such a list would obviously be a useful tool for developers of open learning in this country, particularly if baseline data were gathered in each area through pilot studies before introducing large scale open learning opportunities.

SUMMARY

This section has considered comparative costs for open and conventional learning systems, looked at the question of economies of scale and stressed the importance of considerations of efficiency and effectiveness. On this basis, is there sufficient justification to develop open learning opportunities further in New Zealand? What financial constraints should be applied?

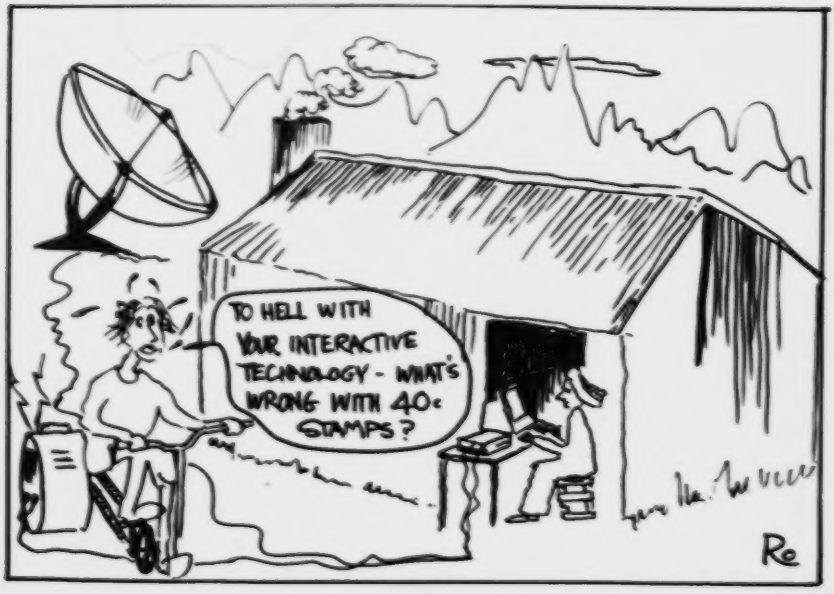
METHODS AND MEDIA

There is a rapidly growing international literature on the methodology appropriate for open distance learning making it unnecessary to deal with this subject at length in a paper of this nature. There is also a growing understanding in this country of the concepts behind open learning and the developments necessary to introduce them. A Department of Education national inservice course in July 1987 addressed the question of present and future developments in open and distance learning and identified a number of current initiatives in these fields (See Appendix 1).

However, some aspects of methods and media warrant special mention.

TECHNOLOGY

One of these is the place of technology. While some may be uncertain, the MSC was in no doubt when it stated in 1983 that "technology based learning systems hold the key to making a reality of more flexible training, and to progression through the education and training systems" (40).



Cartoon by Robin Shepherd 33

As explained on pages 3 and 4 open learning is more concerned with method than with content. This provides a valuable clue to the MSC's insistence on a technology base. Learning by reception of input, which, on its own, is ideally suited to print based media, is a passive method that is unlikely to motivate many adult learners or facilitate learning in an open system. Rather, it is necessary to recognise the adult preference for discovery or active learning which requires inter-active methods and media.

One much debated area of technology concerns the use of video. How important is a video element in an open learning package? Otago University states that research shows that audio systems are extremely effective, more flexible and much less expensive than television. Thus its initial commitment in distance learning is to provide a national teaching network based on audio-technology with the provision of slide-tape projectors and video playback facilities in established learning centres (41). British research also suggests that the importance of video can be over-estimated as Hodgson found that a passive video component of a particular programme was perceived by learners to be marginal and therefore was not watched. However, in some cases, he points out that video is virtually essential. For instance, inter-active video packages form an integral part of open learning programmes in the area of interpersonal skill development and learning based on complex human problem situations (42).

It is also important to note the American developments in this field. Professor K D Stephen of Heriot-Watt University, Edinburgh (43) comments that the dramatic developments in distance learning video courses in that country during the past 20 years have gone largely unnoticed. He points in particular to the development of tutored video instruction (TVI) at Stanford University which involves "creating an educationally dynamic group where students in a small group of 6 to 12 people teach themselves." Tutor assistance is available to these groups, but not before the members have had the opportunity to find solutions to their questions themselves - which they usually do. Stephen points further to the findings of a House of Lords Select Committee in 1984 "that students using this methodology were enabled to outperform others receiving the very same lectures live and in person."

However, it is not the purpose of this paper to discuss the respective merits of inter-active video, computer based instruction, tutored video instruction and other emerging techniques based on new technology. Rather it is to establish the principle that, to be effective, open distance learning will need

to use modern methods and media suitable for discovery learning. No doubt the recent foray of Massey University into educational television will be watched with interest. Having made a significant contribution to the development of the Open University in the United Kingdom, Massey will now be able to benefit from that institution's experience with television as a learning medium.

THE MEDIA MIX

It is the experience of the Open University that the most effective course materials for open learning include text which:

(a) has a personal tutorial style;

(b) opens up the subject and leads the learner into other material often included as extracts from books and articles;

(c) regularly requires the learner to stop and relate what is being studied to the job actually being done; and

(d) involves the learner in considerable practical work, which for some technical courses will include home experiment facilities, such as a microprocessor, a work station or a robot.

Writing on this topic in the **Journal of European Industrial Training**, David Roche observes that:

MEDIA MIX FOR OPEN LEARNING

Fig. 4 *after Roche*

"Skill in distance teaching requires the right media mix to stimulate and motivate the participant who is often working alone. Audio tapes are used whenever topics are better introduced by the human voice. If the topic is, say, brain-storming, it is clearly better to hear it in action than simply to describe it in the text. Similarly, audio-tutorials are used very effectively to accompany the issues in the text and to introduce and analyse video and television programmes" (44).

Illustrating this from the Open Business School course "The Effective Manager" Roche demonstrates, in Figure 4, the way the various components of this six month course fit together in a rich media mix. As he points out, this is an integrated course in which every component plays its part.

OPEN LEARNING CENTRES

Comment has been made earlier in this paper on the significant contribution that 'learning groups' can make to the effectiveness of open learning (p18 and p 26). Similarly, access to an open learning centre - whether with video, computer, scientific or office machine equipment - can obviously make an important contribution to increased effectiveness.

For instance, the space age training centre in Dublin operated by The Training and Employment Authority (FAS - incorporating AnCO, the former Industrial Training Authority) has an impressive open learning computer workshop. Local employers and employees are able to visit the workshop, which is usually staffed by a resource tutor, to use the computers and improve their skills at any convenient time in the day or evening. The concept of open learning resource centres in our regional polytechnics is one that merits consideration as part of the co-operative enterprise envisaged earlier.

It should not be too large a step, once such learning centres are established, to incorporate the 'drop in and learn' concept whereby company employees or individuals are able to access new technologies or to brush up on basics. This principle, using individualised learning materials, has been well established in the down-town colleges in the United States since the 1970's. There, off duty nurses and police officers, busy homemakers and mothers, and the unemployed, rub shoulders informally in learning environments geared to the needs of individuals. Sydney and Meadowbank Technical and Further Education Colleges in Australia have been operating individual learning centres for 10 or more years designed to help adults improve their English and/or mathematics on a self-learning basis. Holland College, referred to on page 5, is basically an open learning institution with the learning managers (tutors) allowing open entry, self selection and open exit for students at all hours that the College is open. Nor should such opportunities be restricted to teaching institutions. A number of British enterprises have established their own in-house open learning resource centres as part of their commitment to updating and developing their staff.

The most significant development to date in this field in New Zealand is the Learning Centre operated by the State Services Commission in Wellington. Based on open learning principles using high technology for delivery, the Centre offers a wide range of some 50 self paced individualised learning programmes. These include training in management, marketing, supervision and key board

skills to name a few. Widely used by public sector staff the Centre is not, as yet, as well known or used by the private sector. It could provide a useful model for developments in other cities.

It has been stated earlier that open learning is as equally applicable to institutions as it is to distance education. It also applies to academic as well as to practical subjects. The establishment of a learning centre or learning workshop is one way of introducing open learning in an institutional setting. Roger Lewis, deputy director of the National Extension College, in advocating the changes necessary for education as it faces new challenges, explains that all that is required to achieve this is the creation of an open area in which learners and staff work, instead of in conventional classes. Lewis points out that this requires "a sizeable and coherent chunk of the curriculum to be moved into the workshop at one go and that learners accept this method of learning from multi-media materials."(45)

He describes such a development in the teaching of mathematics in Bradford and Ilkley Community College. But there are also examples of this mastery learning much closer to home. One of these known to the author was the successful conversion of the 3rd and 4th form mathematics syllabus to an individualised mastery approach at Naenae College, Lower Hutt, in the 1970's. There are no doubt other examples of similar initiatives in the field of mastery learning in other secondary and tertiary institutions. It is but a small step from this to the development of a full scale open learning approach.

ASSESSMENT

Another feature of open learning methodology that requires mention is the question of assessment. Professor Cooper of Henley (46) stresses that good distance learning programmes should contain a high measure of self-assessment allowing individuals to monitor their own progress - a principle which is a feature of TCI programmes in New Zealand. But, whereas New Zealand programmes are currently directed almost entirely at the achievement of national qualifications, Cooper claims that "the true worth of any training programme must be seen in improvements in performance and productivity". This can only be assessed by stating clear performance objectives at the beginning and measuring change against them. As has been seen earlier, in considering the Holland College and SCOTVEC experience, open learning has a direct relationship to the concept of competency in performance based education. There is much to do in developing assessment techniques that are appropriate to this

requirement. The watch word for the 1990's with its performance reward demand, must surely be that people are paid for what they do rather than for what they know. In the cost conscious world of the future it is necessary to be aware that, from the point of view of employment-related education, knowledge is simply an enabling factor that contributes to effective performance.

In a wide ranging UNESCO study of distance learning for technical and vocational education, it was pointed out that while certification is seen as an important feature of courses by many employees, this feature of vocational education is not rated very high by employers, except in terms of employee satisfaction (47). With the small and highly mobile workforce in New Zealand there seems much greater agreement amongst unions and employers that all training should provide credits towards qualifications that are portable and nationally recognised. The application of the SCOTVEC modular national certificate approach to our national qualifications system would not only support this concept but would also encourage the development of open learning modules that could be assessed against specific learning objectives and credited towards one or more qualifications.

The development of a wide variety of short modules that are relevant to a learner's requirements and from which a choice of topics or skills can be made will also provide a challenge to certification and validating bodies. In effect, this implies that any development on the SCOTVEC model should also encourage open learning initiatives.

There are other factors that relate to the methodology of open learning which are already well documented. Those that have been chosen for this paper are seen to have special relevance to any consideration of the possible introduction or development of open learning in a new and largely unexplored environment.

SUMMARY

The need to invest in modern technology and to develop concepts such as open learning centres, self assessment and a skills mastery approach as essential features of developments in open learning have been identified in this section.

Does New Zealand's limited population and small scale industry justify such developments? If so, how should they be promoted?

QUALITY IN OPEN LEARNING

Considerations of quality tend to be made in terms of practical issues that relate to the standard of production, the clarity of instructions, the level of language, the relevance of visual aids, the provision of practical exercises, and so on. Of course this is very necessary and relevant and can be covered by the production of standard formats, checklists and other aids for producers which are already normal practice in the production of technical correspondence courses in New Zealand. These procedures enable an outside observer to make judgements about the quality of the material and also give those responsible for its production suitable standards against which to measure their work. To assist in this process the MSC has recently published a code of practice both for producers and deliverers of open learning programmes and also for sponsors who will pay for or contribute to the cost of producing and operating open learning schemes (48). They explain how quality open learning operates and advise how it can give cost effective training of high quality.

THE LEARNER'S PERSPECTIVE

It is equally important to ensure that learners get the most out of their open learning experiences. Two quotations from Carl Rogers, one of the great pioneers of open learning, will serve to illustrate this point. Writing almost 20 years ago he said:

> "The most socially useful learning in the modern world is the learning of the process of learning, a continuing openness to experience and incorporation into oneself of the process of change" (49).

This followed a similar and even more remarkable statement for its time in the early 1950's when he said to an astounded group of educationalists:

> "I have come to feel that the only learning that significantly influences behaviour is self-directed, self-appropriated learning".

In other words, self-education is student driven. Thus, to get the most out of learning, a student must first own it and than be transformed by it. Rogers was, in fact, identifying another standard of quality which may be much more significant then the results achieved in public examinations - still almost the only quality determinant that is recognised and respected in this country. In the United Kingdom the recently published **Action Guidelines for Individual Learners** inform them of the questions they need to ask producers and deliverers so that what they receive is what they want and is of a quality that will suit their needs (50).

The need for quality guidelines for all parties was made clear from a study of two MSC open learning packages to identify reasons for students dropping out (51). Low commitment was seen as a common cause but the reasons for this are significant. It was often because students had been nominated for courses by their employers without their knowledge or because they simply had inadequate time or facilities to complete the course. Others found materials of low relevance or pitched at an inappropriate level while a further complaint was lack of feedback or support. The need for such guidelines in open learning developments in this country will be equally important.

If we accept Rogers' contention, then the role of the provider of open learning material is to provide the framework which first helps to make students aware of what is possible and then provides the necessary support to bring it about. This suggests that open learning units should be as free standing as possible and should act as triggers to lead students to the kind of experience that is not only possible but also necessary if open learning is to achieve its full potential.

This concept has been fully explored by Peter Critten in reflecting on his work in designing an Open Tech project for the Hotel and Catering Industry Training Board in the United Kingdom (52). He argues "that we will not realise the potential of real openness to learning until we start focusing on open learning as an end in itself and not just as a means". By this he implies that we need to ensure that the promise open learning offers for enhanced personal development is not dissipated or discredited, as programmed learning was, as simply an expedient technique for delivery. It should in fact be much more. As people adopt a new attitude to learning from a genuine open learning experience Critten suggests they will discover others of like mind who will be able to support and reinforce them in their own development. It follows that, as such inter-relationships grow, there would be a move towards the establishment of a learning environment which would reflect a very different set of attitudes and values from that which exists at present.

A QUALITY PROCESS

In other words Critten is supporting the definition of open learning given on page 3 of this paper. It is clear that he, too, supports the contention that more attention needs to be paid to the **process** of openness rather than to openness of **delivery**. Just as Rogers before him in America, and Callaghan in New Zealand, he is concentrating on the effect on the user. On this basis

FIG. 5 FOCUS ON QUALITY after Critten

Critten defines **quality** as "a function of what is best for an individual in a particular context" (53). He sees this as a three way interaction between what is best -

* from the provider's point of view (e.g. good design of programme)
* from the individual's point of view (e.g. their learning style; motivation or ambition)
* in the particular context in which the material will be used (e.g. work, homebased, support available).

Figure 5 illustrates quality from Critten's perspective.

A 'TRANSFORMATION' EXPERIENCE

Put differently, Critten is arguing that there is the potential in genuine open learning for students to get more out of the experience than a simple improvement in knowledge, skills or qualifications that they would expect in a normal "closed" system. It is generally accepted that, in a normal learning cycle, students should move progressively through the three awareness levels of "operations", "consequences" and "integration" and that, in a distance learning programme, this can be achieved through reassurance (motivation) and tutorial support. But to break through to the higher awareness levels of "reflection" and "transformation" Critten claims that an additional type of outside support is required (54). He calls it **catalytic** because its purpose is not to provide more information but to bring about change in students' awareness of themselves.

If this view of quality is accepted then the providers of open learning are faced with a challenge that will absorb all of their energies and will test their initiative to the full. It implies that the student will first need to feel a sense of ownership of the learning that is being undertaken, but then, in addition to acquiring the specific competencies which result from it, will also undergo important attitudinal and behavioural changes that will have significance for performance in an employment situation - or in other environments also for that matter.

Figure 6 indicates this quite clearly as it shows the two additional awareness levels that are potentially available to students through open learning.

Fig. 6 AWARENESS LEVELS *after Critten*

Level of Awareness	Key "trigger" questions and textual support built into existing material	Additional design features to be built into scheme	Nature of outside help needed to help move student from one level to another
Transformation ▲		"How different does the world look now?"	Catalytic Reflect back to student his own experience to help him restructure his view of the world
Reflection ▲		"What difference does this make to me *personally*?" Additional "trigger" points to make student stand back from material	Catalytic Reflect back to student his own experience to help him restructure his view of himself
Integration ▲	"How does this new information fit into what I already know?" Case studies Thematic connections (see Figure 4)		Tutorial Help with content
Consequences ▲	"What conclusions can I draw?" Self-assessment questions		Tutorial Help with content
Operations	"Carry out the following exercise..." Instructions Assignments		Motivational Give reassurance

SUMMARY

Quality has been considered from the point of view of the student in this section where the emphasis has been on the potential of open learning to meet student needs in an enhanced way which goes beyond immediate and perceived requirements. How should the effectiveness of current distance education programmes be assessed and how should providers respond to this challenge?

ISSUES AND CONCERNS

The purpose of this paper has been to stimulate thought and discussion by concentrating attention on some of the developments that have been taking place on the international scene in recent years. Where similar developments are occurring in New Zealand these can provide points of reference or comparison or even promote contacts to share knowledge and experience. Where developments have not yet begun they will hopefully provide stimulation and encouragement.

When considering the potential for further developments in open distance learning in New Zealand there are some issues that will need to be addressed in a systematic way if we are to avoid wasteful duplication. Some of these are now identified in this section.

ACCESS

In addition to those groups who have already been identified as needing improved access to opportunities for continuing education there is also the question of gaining access to open learning materials as they are developed. One of the chief difficulties associated with a modularised open learning programme is the potentially large and diverse smorgasbord of learning materials and activities that it contains. The menu could become so vast and complex that a potential learner could be frightened away before sampling it.

To overcome this problem in Britain the Manpower Service Commission (MSC) has developed the Materials and Resources Information Service Network (MARIS-NET), an on-line service to which access is gained by payment of an annual subscription. It is possible to dial into the MARIS-NET using any computer or view data terminal which can access PRESTEL type services. This provides access to learning materials and a resources database, an open learning bibliography, and full electronic mail facilities.

In this country the Assignment Store of the Technical Correspondence Institute contains some 9000 paper-based assignments in up to 900 different subjects - plus more recently produced computerised material. As these assignments have been written by tutors for students on an individual basis they should require little alteration to make them attractive to and useable by the adult population in general. They also have the potential to form the basis of supplementary video programmes targeted at disadvantaged groups. As they have been produced with public money this fits well with current Government policy

to improve access to training opportunities.

Because there is currently no keyword index - not having been required when assignments were purely part of subjects - the establishment of one would be a major task initially. But the Educational Resource Information Center (ERIC) and the Asian and Pacific Skill Development Programme (APSDEP) have each produced a thesaurus designed specifically for the vocational education and training field. The use of such aids could link the material with an international data base accessible in New Zealand through the National Library and, at the same time, make New Zealand material available internationally. Alternatively, as a first step, this material could form the basis of an Open Learning Directory, as illustrated in Appendix 2, which has been published annually by the Manpower Services Commission.

The need for the establishment of a national data base for distance and open learning has already been recognised in the recommendations (shown in Appendix 1) from a national inservice course in 1987 which examined distance and open learning both now and in the future (55). There was also support for a more accessible data base from those interviewed in recent VTC studies of rural training and retraining needs in Northland and the King Country. Just as the Department of Labour has developed its computer network to link job seekers with registered vacancies so we need to promote a similar network - possibly through our public libraries - to link providers and potential users of open learning.

PROFESSIONAL SUPPORT

The MSC initiative with the Open Tech has created a great deal of activity in the United Kingdom where it has been realised that, if open learning is to be differentiated clearly from correspondence teaching there must be extensive re-education of teachers and industry trainers plus professional support and assistance for the introduction of open learning techniques. As part of an MSC sponsored series, "Training in the 1990's" an introductory text has already been published which gives guidelines (including action plans) on the key stages that managers need to go through when setting up and running an open learning scheme (56). The British Council for Educational Technology is also publishing a series of guides to all aspects of open learning aimed at planners, managers, writers and tutors (57). We in New Zealand are thus in the fortunate position of being able to refer to such materials to assist us in establishing our own professional support services.

ISSUES FOR TEACHERS AND TRAINERS

Recent research in the United Kingdom undertaken by Bill Bagley and Bob Challis (58) has identified a number of issues for teachers. One of the aims of open learning is to move some of the initiative and control in learning situations from teachers to students. As a result teachers are likely to meet unexpected situations and face greater uncertainty than in traditional teaching situations. As their control of the learning situation diminishes and the requirement to respond to an increasingly wide range of requests increases, some teachers feel that their status as subject "experts" is threatened.

The complexity of methods and skills required can also create problems of adaptation as teachers have to develop new professional and team skills for the production of learning materials; new sensitive and informative approaches to the marking of students' work; and new tutorial skills for working with individuals and small groups. The experience of TCI tutors in these areas has the potential to be an invaluable learning resource for their colleagues in other institutions as open learning expands, as it surely will.

Bagley and Challis also identify an increased complexity of role as a potential difficulty. They point out that it has always been difficult to define the role of teacher in further education but that open learning makes this task more complex and more hazardous. As one teacher whom they interviewed after making the transition from conventional to open learning said:

> "And of course, your role changes. As a teacher in a classroom - you know, you perform, you are up there performing. But in this scheme, you are all sorts of things - tutor, helper, counsellor. It is a different thing altogether - your role changes" (59)

The situation is further complicated by the higher level of student autonomy in an open learning situation. The tutor is caught between feeling a sense of responsibility for a student's success and recognising the need to promote independent learning and personal responsibility. Who, in fact, is judged to be inadequate if a student fails the course?

Traditionally in New Zealand the major emphasis in employment-related education has been placed on initial entry training for school leavers as opposed to on-going training for adults. But, as our population ages and the workforce restructures, there will be a greater demand for adult learning. The need both to master appropriate techniques and to develop open learning materials will provide another challenge for teachers and trainers alike.

CONCERNS

After reciting the perceived advantages of open learning Airey and Goodman (60) also noted the concerns of trainers in industry. The list contains no surprises. Lack of human interaction; drop in motivation due to isolation; and lack of commitment on longer courses are problems that are already well known to TCI tutors. Other concerns include those of industry, for time allowances which cut into working time, and of students if too much personal time is required for assignments - especially if there are no apparent tangible rewards for satisfactory completion. Such factors as high initial costs of hardware for computer based training (CBT); the expense of updating software; and the possible lack of depth or the degree of personalisation of pre-packaged courses were also cited as industry concerns in Airey and Goodman's survey.

OVERVIEW

Perhaps the best overview is provided by Roger Bennett in his introduction to the 1986 issue of the prestigious **Journal of European Industrial Training** devoted entirely to 'Today's Revolution in Open Access and Distance Learning' (61) He points out that the potential benefits of open learning may only be realised where the appropriate knowledge and skills, on which they depend, are available. For example:

- **employers** must be able to assess their needs accurately
- **students** need to develop the right study skills
- **materials** of the right type must be produced
- **guidance** on their use must be made available.

Bennett goes on to point out that all those involved must take their responsibilities seriously. For instance:

- **employers** should continue to invest sensibly in training and allow flexible study time in place of inflexible block courses and day release
- **students** should take adequate responsibility for their own learning
- **providers** must provide the right support for open distance learning through quality study material, tutor support, peer and self assessment opportunities, counselling etc. He concludes with the challenging comment that, "the received wisdom is now that most schemes succeed or fail on the level and quality of student support provided."

It is important that these issues and concerns are recognised and addressed at the developmental stages of open learning - whether institutionalised or distant. No doubt New Zealand educators and trainers will be able to add their unique solutions to some of those described in this paper. But in seeking to do so they should not ignore the collective wisdom and experience of those who have been down the open learning road ahead of us.

SUMMARY

Further developments in New Zealand will have to address the issues identified in this section - the access to programmes, provision of professional support, orientation of teachers and trainers, and the avoidance or overcoming of concerns identified in overseas developments. How can this best be achieved?

CHALLENGE FOR THE FUTURE

THE CHALLENGE

The ongoing, employment-related education and training of adults has been the main theme of this paper. Only passing reference has been made to the underlying issues of social equity and the needs of currently disadvantaged groups. This absence of extensive comment on these aspects of open learning is not by way of ignoring them. Rather, it is a recognition that, if open learning is to be widely adopted, the economic advantages it offers must first be stressed in order to win the commitment of industry. Once that commitment has been won then all groups in the community will be in a position to benefit from the adoption of the kinds of programmes proposed. It is clear that, through the establishment of the necessary institutional framework and the use of modern technology, open learning could offer many potential benefits for all who are disadvantaged through home-making or child care responsibilities, cultural diversity or geographic isolation. But these underlying social issues go beyond the scope of this paper because successful programmes in these areas will require an exercise of national will and the long term commitment of resources from which there may well be no apparent short term advantages.

The Open Tech proposals in Britain were seen as timely for two main reasons. On one hand they showed the possibility of development and expansion at a time of general retrenchment in education and training and on the other they recognised the urgent need to increase training opportunities for adults to improve the quality of the workforce. Both of these reasons are equally apparent in New Zealand today. Adult participation rates in continuing education are low by international standards and a major source of training has been lost as State Owned Enterprises show little inclination to continue to fill the training role previously provided by the Government departments they have replaced. In the private sector both employers and unions frequently appear more interested in redundancy agreements than in retraining opportunities based on flexible long term planning for economic growth. The projected decline in the labour force entrant group and the growing free market economy, with its emphasis on competence and flexibility, will also increase the requirement to up-skill and retrain adult workers.

This paper has developed the theme that open learning can make an important contribution to the achievement of the twin goals of social equity and economic recovery. The challenge now is how this can best be achieved.

THE INGREDIENTS

In the Introduction to this paper the point was made that, by the early 1980s, New Zealand had all the ingredients to produce a successful open learning system which would enlarge the share of learning experiences available to all adult New Zealanders. These have been referred to in the paper and may now be summarised as follows:

* an established national technical correspondence institute with a wide range of experience and expertise in distance education and enormous assignment resources with the potential for adaptation to open learning programmes
* a network of regional polytechnics well equipped to provide support for open learning
* a network of industry training boards well placed to provide the essential link between industry and education at a national level to ensure cost effective use of scarce resources
* a growing volume of experimental work, especially through universities and Government departments but increasingly also through polytechnics and private providers, in using technological advances to enhance learning opportunities
* a wide range of employment-related education materials developed, sometimes co-operatively but often independently, by industry training boards, polytechnics and universities, the Vocational Training Council, Government departments and private providers
* an established principle of Government catalytic support for new training initiatives through the Training Development Assistance Fund administered for the Minister of Employment by the Vocational Training Council.

The point was also made that all that appeared to be lacking then was the recipe. But, whereas in the early eighties the concept of open learning was relatively new and unexplored there is now a wealth of international experience available to draw on. Thus, the rapid movement of events in recent years suggests that, in addition to possessing the ingredients, the recipe is also now available to us - albeit an international one, which will need to be modified to provide a distinctive New Zealand flavour. Nor should there be any lack of chefs! There is already established, since 1985, an active Distance Education Association of experts and enthusiasts in this general field. Perhaps all that we need to make things happen is a catalyst and commitment to change - plus cash, because initial costs will be high.

A NATIONAL RESOURCE CENTRE

Given our small and highly mobile population and the need to produce quality programmes in open learning that are widely recognised and accepted, a national resource centre appears to be the essential foundation on which to build an open learning approach to employment-related adult education.

The function of the National Centre could be to generate learning materials and courses; to establish a co-operative network providing professional services to education and industrial providers; to determine which courses could most usefully be produced on an open learning basis and commission them from those institutions best able to produce them; and to develop inventories of distance-learning materials (as, for instance, the MARIS-NET described on page 35). It could also translate existing conventional teaching materials into open learning packages; assist institutional development by training staff in open learning techniques; and develop evaluation and quality control methods and procedures.

While initially the National Centre would rely heavily on Government funding it should seek to obtain funds from a wide range of sources. Industries and enterprises keen to promote training of good quality in areas of skill shortage have proved to be valuable partners in the Open Tech Programme in Britain. Private trusts and foundations could be encouraged to invest in the concept and institutions might pay to acquire materials from the Centre. The potential to export the materials produced should also be explored. Although the initial costs might appear to be substantial they would be greatly reduced by capitalising on our already heavy investment in distance education and the considerable professional expertise available in this area.

This would appear to be an obvious role for the Technical Correspondence Institute; not a new suggestion. As long ago as 1975, in an article for the Technical Institutes Association entitled, **Vocational Education in the Next Decade**, Ivan Moses, then the Principal of Auckland Technical Institute, wrote:

> "Recently it has become apparent that TCI may serve other institutes as part of its function. The TCI has suggested that it is willing to assist in extending the "additional assistance" scheme and the provision of course outlines for tutors in other institutes, in using its facilities as a **national resource centre**" (my emphasis) (62)

Over a decade later this challenge still confronts us. In a report following visits to distance education and related organisations overseas in 1987 Fred Johnson, Head of the Department of Electrical Engineering at TCI observed that he was previously unaware how antiquated our methods of processing information had become by comparison with overseas developments (63). He returned convinced that, "a TCI responding to vocational needs is possible by evolution and with relatively little additional cost."

However, the concept of such a national resource centre raises the question of the future role of TCI. Would it, for instance, be better that the developmental and provider roles should be separated? On the one hand there is a clear need for a systematic and coherent approach to the development of nationally recognised materials and professional support services to other institutions. On the other there is commitment to the greatest possible devolution of delivery systems. A possible alternative to present arrangements is considered in the proposal that follows.

THE PROPOSAL

The proposal which follows consists of eight practical steps designed to turn the concept of open learning into a reality as part of an overall national strategy to enhance learning opporunities for adults.

1. **Commitment and Awareness**: It is first necessary to **convince the Government** that open learning can contribute effectively to the achievement of its long term social and economic goals because **Government commitment** and an **allocation of resources** is an essential pre-requisite for any systematic expansion of open learning opportunities. This needs to be followed by a major **awareness raising campaign** aimed at employers, workers and adults generally to promote the benefits of open learning.

2. **Partnership with Industry**: The commitment of industry is of equal importance as developments in employment related open learning need to be **consumer driven**. The development of this **partnership with industry** may best be achieved by the establishment of an **Open Learning Initiatives Fund** to provide the initial stimulus, through Government assistance, for the production of industry-relevant open learning materials.

3. **National Resource Centre**: This is needed to avoid unnecessary duplication and wastage and to co-ordinate developments and produce resources in a

cost effective manner. It is suggested that the **Technical Correspondence Institute** should become a **national resource centre** with functions as outlined earlier in this section.

4. **Partnership of Providers**: The proposed National Centre would not itself enrol individual students as that would be a function of its partners, the polytechnics and other providers. Thus the **regional polytechnics** would have a **new role** in open and distance learning that made specialised courses available throughout the country. However, there would continue to be a need to provide a wide range of programmes for those for whom access to a regional polytechnic is difficult and also to deliver programmes at a national level when the local demand for them is insufficient to warrant wider provision. This raises the appropriate **relationship** that should exit between **the Central Institute of Technology and** the provider role of the present **Technical Correspondence Institute.** It is an area which requires further investigation and consultation.

5. **Technology**: The present experimental learning programmes - using a technology approach - being developed and undertaken separately by correspondence institutions, universities and polytechnics and the Department of Education need to be drawn together and considered by experts in the field who also have a knowledge and understanding of the strengths and weaknesses of similar developments overseas. A set of **technology guidelines** could then be developed suitable to New Zealand conditions which could provide the basis for Government and industry financial support for further initiatives.

6. **Search Conference**: Any examination of the future role of open learning must also include consideration of where we, as a nation, need to be with respect to adult employment-related education and training, re-training and up-skilling in 5 years time. A strategy then needs to be devised to achieve this. A useful starting point could be a **Search Conference** which brings together all the parties who need to be partners in the development of such a strategy.

7. **Task Force**: Having identified the strategy an action team dedicated to its achievement may need to be established. In his earlier mentioned report (p 42) Johnson has proposed the appointment of "a full-time **Task Force** of visionaries" to plan future developments for TCI. This proposal should be considered, not just for TCI, but on a national basis.

8. **The Method:** Through its all embracing membership of the groups and institutions with an interest in employment-related open learning the **Vocational Training Council** has the potential to encourage initiatives and to develop policy advice in this area. At its meeting in August the Council will be invited to address the issues raised in this discussion paper and to support proposals developed from the ideas that it contains. In doing so the Council will be assisted by input from organisations and persons with an interest in this subject.

CONCLUSION

The essential requirement for success will be co-operation. This may be seen as unfashionable by some at a time when "market forces" and "competition" are the current catch phrases. But, if access to quality education is to be extended to our relatively small and highly mobile population, so that all have the opportunity to acquire knowledge and skills and to develop competence in employment-related areas, this is more likely to be achieved through co-operation rather than by competition. It would particularly enhance opportunities in rural areas which could suffer from a market led approach to education, and for women and disadvantaged cultural groups. The achievement of the twin goals of social equity and economic recovery will depend, to a large part, on the development of the full human resource potential of all New Zealanders. Open and distance learning could play a significant role in accomplishing this. As a nation, we now need to co-ordinate our approach, to build on our past achievements and to incorporate modern overseas experiences in order to convert our ideas into reality. That is the challenge for the future.

SUMMARY

This section has brought together the themes that have been developed throughout the paper and has summarised the ingredients already available for incorporation into a national approach to the promotion of open learning. It has combined these into a proposal which, if adopted could provide a practical mechanism for further developments. What comments do you have on the proposal developed here?

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APPENDIX 1

SOME CURRENT INITIATIVES IN DISTANCE AND OPEN LEARNING IN INDIVIDUAL INSTITUTIONS OF POST COMPULSORY EDUCATION IN NEW ZEALAND IDENTIFIED BY A NATIONAL IN-SERVICE COURSE, JULY 1987 (Source: See Reference 55)

The integration of the work of the Advanced Studies of Teachers Unit (ASTU) into the programmes provided by the 6 teachers colleges.

The development of Link programmes (with secondary schools) through the New Zealand Technical Correspondence Institute (NZTCI).

The Correspondence School in the development of programmes to meet the needs of individual educationally disadvantaged students and the provision of opportunities for second chance education.

The establishment of the Massey University Extra-Mural Studies Board.

The development of a Telecommunication's Option for the delivery of the Massey University Extra-Mural course, "Computers in Education".

The passing of the Trade Union Education Authority Act that recognises the opportunities possible through distance education and open learning.

The development, through the use of data bases and communications technology systems, of distance and open learning programmes through and in association with other than the traditional education/training providers.

The funding, by the Department of Education, of the "Open Learning/Delivery Technology" Pilot Project currently under development.

The use of word processing facilities in the development, updating and computer management of a correspondence course in Beekeeping through the Bay of Plenty Polytechnic, the NZTCI and the National Beekeepers Association, with validation through the Authority for Advanced Vocational Awards.

The integration of educational technology in the delivery of the Diploma of Communications course at Victoria University.

Wellington Polytechnic's development of interactive video disc delivery systems.

The establishment of Maori Radio.

Developments by Auckland Technical Institute and Otago Polytechnic in meeting the needs of "out-of-town" students in the Animal Technology course.

The development of the National Library data bases.

Government departments, local bodies, commercial interests, organisations and individuals in the development of educative packages.

Educational and access radio set up in Christchurch, Blenheim and Wellington.

National and regional teleconferencing networks developed by Otago University.

The formation of the Distance Education Association of New Zealand (DEANZ).

The development of many distant teaching programmes where tutors travel to centres away from main campuses. While such programmes are not distance learning in the strict sense of the term they share, with distance education, many features and problems related to access for those isolated from urban centres.

APPENDIX 2

EXTRACT FROM OPEN TECH DIRECTORY

ANALOGUE AND DIGITAL DEVICES PRACTICAL (ED 2.4) [1/152]

What it's about:	Connecting sensors to the computer interface
Who it's for:	Practitioners, trainees in robotics
To start you need:	Module—Electronic devices (ED 1.1, ED 2.1-3, ED 3.1-2, ED 4.1-2) [1:160]
Level of subject:	Introductory to practitioner
How long it takes:	2 hours
What you get:	Print, CBT, special course kit
What you need:	BBC Model B micro-computer
What it costs:	On application
Extra information:	Access to hardware arranged, tutorial support arranged
Information to ask for:	Leaflet
Name of project:	ORT Open Tech Robotics and Automation Literacy Course
Person to contact:	J.V. Harstein Tel: (01) 431 1333
Course entry No:	[1:214]

ANALOGUE ELECTRONICS: DEVICES (DT1) [1/153]

What it's about:	One of a series of packages on analogue electronics. Covers operation and application of common devices widely used in industrial equipment and systems
Who it's for:	Anyone involved in construction, testing and fault-finding of equipment and circuits employing analogue devices
To start you need:	No qualifications necessary, completion of previous relevant packages or understanding of basic maths and electrics
Level of subject:	Introductory to advanced
Leads to:	Southtek Certificate
How long it takes:	16 hours
What you get:	Audio, circuit board kit, print, video
What you need:	Audio cassette player, video cassette player
What it costs:	User pack £30, adviser pack £40, kit as for NWK1 available for hire, £100 to purchase
Extra information:	Access to hardware and tutorial support arranged
Information to ask for:	Inspection copies, leaflet
Name of project:	Southtek
Person to contact:	Ms A Bond Tel: (0273) 607164
MARIS register No:	91334
Course entry No:	[1:147]

ANALOGUE ELECTRONICS: WAVEFORM GENERATORS (NWK1) [1/154]

What it's about:	One of a series of packages on analogue electronics. Covers waveform generators, discrete circuits in use, oscillators and integrated circuits, digital methods of waveform generations
Who it's for:	Anyone involved with construction, testing and fault-finding of equipment of circuits employing waveform generators
To start you need:	No qualifications necessary, understanding of relevant oscillators in basic circuits, ability to use a multimeter and an oscilloscope
Level of subject:	Introductory to advanced
Leads to:	Southtek Certificate
How long it takes:	16 hours
What you get:	Audio, circuit board kit, print
What you need:	Audio cassette player
What it costs:	User pack £30, adviser guide £15, kit as for DT1 available for hire, £100 to purchase
Extra information:	Access to hardware and tutorial support arranged
Information to ask for:	Inspection copies, leaflet
Name of project:	Southtek
Person to contact:	Ms A Bond Tel: (0273) 607164
MARIS register No:	91336
Course entry No:	[1:147]